

OWNER'S MANUAL PP500AC

HIGH SURGE POWER INVERTER



WHISTLER

ENHANCED DRIVING TOOLS

WHISTLER PP500AC

Welcome To WHISTLER.

For over 30 years, WHISTLER CORPORATION has been manufacturing a wide range of products designed to make your driving experience safer, more comfortable and more enjoyable.

Included in the WHISTLER line is a special selection of products we call "Enhanced Driving Tools." These products range from portable jump start systems to high intensity flashlights to radar detectors and are designed to keep you ...

IN TOUCH • IN COMFORT • IN CONTROL

A Word About WHISTLER Inverters.

WHISTLER manufactures a complete line of DC to AC inverters ranging in capacity from 50 Watts to 2500 Watts. These inverters offer advanced technology, dependable operation and will provide years of reliable service when used in accordance with our operating instructions.

WHISTLER inverters convert low voltage, direct (DC) current to 110 volt alternating (AC) household current. Depending on the model and its rated capacity, WHISTLER inverters draw power either from standard 12 volt automobile and marine batteries or from portable high power 12 volt sources.

Certain models in the WHISTLER inverter line operate indirectly through an adapter which plugs into the cigarette lighter socket in your car, truck or boat. Other models, such as the WHISTLER 500, are designed to be hard wired directly to the 12 volt power source.

Important Information About The WHISTLER 500 Watt Inverter.

This manual will provide you with directions for the safe and efficient operation of your WHISTLER 500 Watt Inverter. Read the manual carefully before using your inverter and keep the manual on file for future reference.

Note:

- The WHISTLER 500 is designed to operate from a 12 volt power source only. Never attempt to connect the inverter to any other power source including any AC power source.
- Do not attempt to extend or otherwise modify the connector cables.
- 110 Volts of current can be lethal. Improper use of your inverter may result in property damage, personal injury or loss of life.

Getting Off To A Good Start

Power equipment and appliances which operate with motors or tubes require an initial surge of power to get them up and running. This power surge is referred to as the "starting load" or "peak load." (By comparison, devices such as standard light bulbs do not require a starting load). Once the equipment or appliance has been powered up, it settles down to a slower pace and requires far less electrical power to operate. This lower power requirement is referred to as the "continuous load."

In order to ensure that the capacity of your WHISTLER 500 is sufficient to meet the required start up load, you must first determine the power consumption of the equipment or appliance you plan to operate.

Power consumption is rated either in wattage or in amperes and information regarding the required "watts" or "amps" generally is stamped or printed on most appliances and equipment. If this information is not indicated on the appliance or equipment, check the owner's manual or contact the manufacturer.

If the power consumption is rated in amps, multiply the number of amps by 110 (AC voltage) to determine the comparable wattage rating. As a general rule, you can determine the *required start up load* by multiplying the wattage rating by 10.

For further information on the fundamental operating principles of inverters and related data, see the section in this manual entitled "**For You Technical Types.**"

Don't Push It.

Although your WHISTLER inverter has the capacity to provide power output (excess current) equal to approximately two times its rated wattage capacity for a very brief period, it is designed to operate equipment and appliances with *start up load* wattage ratings no higher than its own *maximum continuous wattage rating*.

For example, the 500 model has a maximum continuous rating of 500 watts. Although this model has the capacity to briefly provide up to 800 watts of power (that is, excess current), it is designed to operate equipment and appliances with start up load requirements of 500 watts or less.

Consequently, if the start up load rating of your equipment or appliance is in the 500 watt range, the WHISTLER 500 may not have the capacity to provide the required start up load.

To determine whether the WHISTLER 500 will operate a particular piece of

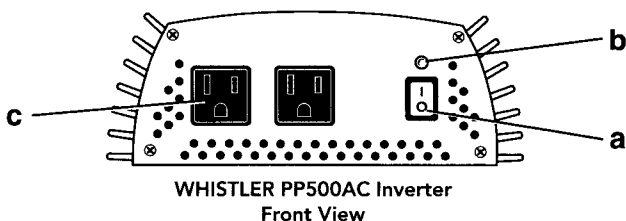
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equipment or appliance, run a test. The WHISTLER 500 is designed to automatically shut down in the event of a power overload and testing appliances and equipment with ratings in the 500 watt range will not damage it.

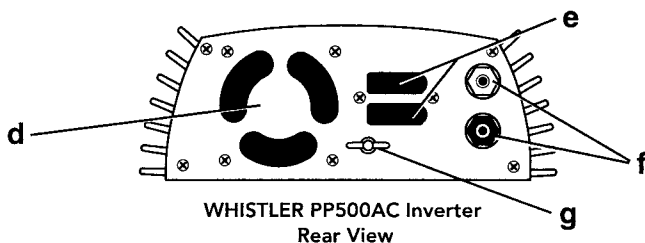
If a piece of equipment or an appliance in the 500 watt range will not operate properly when first connected to the inverter, turn the inverter rocker switch ON (I), OFF (O), and ON (I) again in quick succession. If this procedure is unsuccessful, it is likely that the WHISTLER 500 does not have the required capacity to operate the equipment or appliance in question.

Note:

- Most heat generating appliances require start up loads in excess of 1000 Watts and the WHISTLER 500 will not operate such appliances as coffee makers, irons, hair dryers or heaters.



- a). ON/OFF Rocker Switch
- b). LED Indicator Light. (GREEN = Power ON, RED = Overload)
- c). Two Standard North American AC Outlets are provided



- d). High Speed Cooling Fan
- e). 35 Amp Fuse Covers
- f). Power Input Terminals (BLACK/Negative, RED/Positive)
- g). Ground Terminal

Making The Connection.

1. Make certain that the WHISTLER 500 rocker switch is in the OFF (O) position.
2. Connect the cables to the power input terminals at the rear of the inverter and tighten the screws to make a secure connection. *Do not over tighten these screws.*
3. Connect the cable from the (BLACK) Negative (-) terminal on the inverter to the Negative terminal on the 12 volt power source. Make certain the connection is secure.
4. Confirm that the cable you have just installed is properly connected. Specifically, make certain that the cable is connected to the *Negative terminals on both the inverter and the 12 volt power source.*
5. Connect the cable from the (RED) Positive (+) terminal on the inverter to the Positive terminal on the power source. Make certain the connection is secure.

Note:

- Loose connections can result in a severe decrease in voltage which may cause damage to the wires and insulation.
- Failure to make a proper connection between the inverter and the power source will result in reverse polarity. Reverse polarity will blow the internal fuses in the inverter and may cause permanent damage to the inverter. Damage caused by reverse polarity is not covered under the WHISTLER warranty.
- Making the connection between the Positive terminals may cause a spark as a result of current flowing to the charge capacitors in the inverter. This is a normal occurrence. Due to the potential for sparking, however, it is extremely important that both the inverter and the 12 volt battery be well removed from any possible source of flammable fumes or gases.

Failure to heed this warning could result in fire or explosion.

- If the supplied cables are too short to allow for placement of the inverter in a desired location, the inverter may be connected to the power source using a #4 wire. The steps outlined for making the connection and the related safety precautions remain unchanged.
6. Turn the inverter rocker switch to the ON (I) position. The LED Indicator Light should glow GREEN confirming that there is power running to the inverter.

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7. Turn the inverter rocker switch to the OFF (O) position. (The GREEN LED Power Indicator light may "blink" briefly and/or the internal audible alarm may make a momentary "chirp." This is normal).
8. Confirm that the equipment or appliance to be operated is turned off. Plug the equipment or appliance into one of the two AC receptacles on the front panel of the inverter.
9. Turn the inverter to the ON (I) position. Turn on the equipment or appliance.

Note:

- As indicated in Step 7 above, the audible alarm may make a momentary "chirp" when the inverter is turned OFF (O). This same alarm may also sound when the inverter is being connected to or disconnected from the 12 volt power source. Again, this is normal.
- The use of an extension cord from the inverter to the appliance or equipment being operated will not significantly decrease the power being generated by the inverter. For best operating results, the extension cord should be no more than 50 feet long.
- Check frequently to ensure that the input and output connections are secure. Loose connections may damage the inverter or the power source or may generate excessive heat.

You'll Get A Charge Out Of This. (Or Maybe Not).

Using the WHISTLER 500 to recharge units designed to charge such portable equipment as power tools, flashlights, video cameras and laptop computers may cause damage to the inverter or to the charging unit.

Although we advise against it, if you attempt to recharge a charging unit, monitor the temperature of the charging unit for approximately 10 minutes. If the charging unit becomes unusually warm, disconnect it from the inverter immediately.

For You Television Fans & Audiophiles.

Although the WHISTLER 500 is shielded and filtered to minimize signal interference, some interference with your television picture may be unavoidable, especially with weak signals. However, here are some suggestions that may improve the reception.

1. First, make certain that the television antenna produces a clear signal under normal operating conditions (i.e., at home plugged into a

standard 110 AC wall outlet). Also, ensure that the antenna cable is properly shielded and of good quality.

2. Change the relative positions of the inverter, antenna cables and television power cord.
3. Isolate the television, its power cord and antenna cables from the 12 volt power source by running an extension cord from the inverter to the television set.
4. Coil the television power cord and the input cables running from the 12 volt power source to the inverter.
5. Attach a "Ferrite Data Line Filter" to the television power cord. More than one filter may be required. (These filters are available at most electronic supply stores including Radio Shack. See Radio Shack Part # 273-105).
6. Ground the WHISTLER 500 using an 8 AWG grounding wire in as short a length as possible.

Note:

- Before connecting the ground, make certain that the inverter rocker switch is OFF (O).
- Run the ground wire from the Grounding Terminal on the rear panel of the inverter. (See "Rear View" Illustration, Page 3).
- The selection of a proper grounding point will depend on where you are using the inverter. The grounding terminal may be connected to the chassis of your vehicle or to the grounding system in your boat or to the earth if you are operating the inverter in a remote location.
- Inexpensive sound systems may emit a "buzzing" sound when operated with the WHISTLER 500. This is due to inadequate filters in the sound system. There is no solution to this problem short of purchasing a sound system with a higher quality power supply.

Don't Blow A Fuse.

Your WHISTLER 500 is equipped with two 35 amp, spade type fuses. With reasonable care, it should not be necessary to replace these fuses.

Most blown fuses are the result of reverse polarity or a short circuit within the appliance or equipment being operated. If the fuses do blow, disconnect the appliance or equipment immediately, repair the related problem and install the new fuses which have been supplied with your WHISTLER 500.

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The fuse compartments are easily accessed at the back of the unit underneath the "lift up" covers. (See "Rear View" Illustration, Page 3).

Note:

- Do not install a fuse with a rating higher than 35 amps. Doing so may damage the inverter.
- Make certain to correct the source of the overload which caused the blown fuse before turning the WHISTLER 500 back ON (I).

The Power Source.

When the engine is off, most automobile and marine batteries will provide an ample power supply to the inverter for 30 to 60 minutes. The actual length of time is a function of several variables including the age and condition of the battery and the power demand being placed on it by the equipment being operated with the inverter.

If you are using the inverter while the engine is off, we recommend you start the engine every hour and let it run for approximately 10 minutes to recharge the battery. *We also recommend that the device plugged into the inverter be turned off before turning over the engine.*

Although it is not necessary to disconnect the WHISTLER 500 when turning over the engine, the inverter may momentarily cease operation as the battery voltage decreases. When the WHISTLER 500 is not supplying power, it draws very low amperage (< 0.6 A) from the battery and may be left connected to the battery for up to three hours. *However, we recommend the inverter always be disconnected when not in use.*

Automatic Shut Down Safety Features.

The LED Indicator light (See "Front View" Illustration, Page 3) will turn from GREEN to RED and the WHISTLER 500 will turn itself off automatically when:

1. The power input from the battery drops to 10.5 volts. (When the power input drops to 11 volts, an alarm will sound for an extended period);
2. The power output from the battery exceeds 15 volts;
3. The continuous draw of the equipment or appliance being operated exceeds 500 watts.
4. The circuit temperature exceeds standard design parameters for safe operation.

Note:

- The WHISTLER 500 is equipped with a cooling fan which is designed to run continuously while the inverter is operating. Automatic shut down caused by excess circuit temperatures occurs when the cooling fan is unable to maintain the design parameters for safe operation of the inverter.
- In the event of automatic shut down or continuous audible alarm, turn the inverter rocker switch to the OFF (O) position until the source of the related problem has been determined and resolved.

Some Powerful Advice.

Your WHISTLER 500 will work best when placed on a reasonably flat surface. The floor or your car or truck is a good location as long as the area is dry and well ventilated.

(When driving with the WHISTLER 500 in operation, make certain that neither the inverter nor the power cables will impede safe operation of your vehicle. Keep the inverter and all cables and cords clear of the steering wheel, gear shift and gas, brake and clutch pedals).

To maintain your WHISTLER 500 in proper working condition, note the following important safety precautions:

- **MOISTURE.** Keep the WHISTLER 500 dry. Do not expose it to moisture. *Do not operate the WHISTLER 500 if you, the inverter the device being operated or any other surfaces that may come in contact with any power source are wet. Water and many other liquids can conduct electricity which may lead to serious injury or death.*
- **HEAT.** The ambient air temperature should be between 50° and 80° F. Avoid placing the inverter on or near heating vents, radiators or other sources of heat. Do not place the inverter in direct sunlight.
- **VENTILATION.** In order to properly disperse heat generated while the inverter is in operation, keep it well ventilated. While in use, maintain several inches of clearance around the top and sides of the inverter.
- **FUMES & GASES.** Avoid using the inverter near flammable materials. Do not place the inverter in areas such as battery compartments where fumes or gases may accumulate.

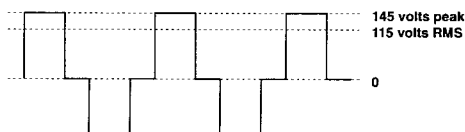
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For You Technical Types.

I. Basic Operating Principles.

The WHISTLER 500 works in two stages. During the first stage, the DC to DC converter increases the DC input voltage from the power source (e.g a 12 volt battery) to 145 volts DC. In the second stage, the high voltage DC is converted to 110 volts (60 Hz AC) using advanced power MOSFET transistors in a full bridge configuration. The result is excellent overload capability and the capacity to operate difficult reactive loads. The output waveform resulting from these conversions is a "quasi-sine wave" or a "modified sine wave" as shown below.

This stepped waveform is similar to the power generated by utilities and has a broad range of applications.



WHISTLER PP500AC Inverter Modified Sine Wave

The modified sine wave produced by the WHISTLER 500 has a root mean square (RMS) voltage of 110 volts. The majority of AC voltmeters are calibrated for RMS voltage and assume that the measured waveform will be a pure sine wave.

Consequently, these meters will not read the RMS modified sine wave voltage correctly and, when measuring the WHISTLER 500 output, the meters will read about 20 to 30 volts too low. To accurately measure the output voltage of the WHISTLER 500, use a true RMS reading voltmeter such as a Fluke 87, Fluke 8060A, Beckman 4410, Triplet 4200 or any multimeter identified as "True RMS."

In Review.

- Never attempt to operate the WHISTLER 500 from any power source other than a 12 volt battery.
- The WHISTLER 500 is designed to be connected to the power source with the supplied cables or with #4 wire. When utilizing the cables, do not attempt to modify them.
- Always make certain that the power cable terminal connections run Negative (-) to Negative and (-) Positive (+) to Positive (+). Check these connections frequently to ensure that they are secure.
- While connecting the WHISTLER 500 to the power source, make certain the inverter is well removed from any potential source of flammable fumes or gases.
- Make certain the power consumption of the appliance or equipment you wish to operate is compatible with the capacity of the inverter.
- If the rated power consumption of the equipment is in the 500 Watt range, test the inverter to ensure that it will operate properly.
- The WHISTLER 500 is not designed to operate heat generating appliances such as coffee makers, irons, hair dryers, toaster and heaters.
- When attempting to recharge battery chargers, monitor the temperature of the charger for approximately 10 minutes. If the charger becomes abnormally warm, disconnect it from the inverter immediately.
- Use only 35 amp, spade type fuses with the WHISTLER 500.
- When operating the inverter with the engine off, start the engine every 30 to 60 minutes and let it run for approximately 10 minutes to recharge the battery.
- In the event a continuous audible alarm or automatic shut off (Green LED Indicator light turns Red), turn the inverter OFF (O) immediately. Do not restart the inverter until the source of the problem has been identified and corrected.
- Always disconnect the inverter when not in use.
- Do not expose the inverter to moisture.
- Avoid placing the inverter near sources of heat or in direct sunlight.
- When in use, make certain that the inverter is properly ventilated.
- Do not use the inverter near flammable materials, fumes or gases.
- Always operate the WHISTLER 500 in accordance with the instructions in this manual. Failure to do so may result in property damage, personal injury or loss of life.

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Troubleshooting

PROBLEM: Low or No Output Voltage

Problem	Solution
Poor contact with battery terminals.	Clean terminals thoroughly.
Battery voltage below 10.5 volts.	Recharge or replace battery.
Equipment being operated draws too much power.	Use a higher capacity inverter or do not use this equipment.
Inverter is too hot (thermal shutdown mode.)	Allow inverter to cool. Check for adequate ventilation. Reduce the load on the inverter to rated continuous power output.
Using incorrect type of voltmeter.	Use true RMS reading meter. See "For You Technical Types" Section of this manual.

PROBLEM: Low Battery Alarm On All The Time

Problem	Solution
Input voltage below 10.5 volts.	Keep input voltage above 10.5 volts to maintain regulation.
Poor or weak battery condition.	Replace battery.
Inadequate power being delivered to the inverter or excessive voltage drop.	Use lower gauge wire. See " Wire Cable Gauges " Section of this manual. Keep wire length as short as possible.

PROBLEM: TV Interference

Problem	Solution
Electrical interference from inverter.	Add a Ferrite data line filter on to the TV power cord. See the " For You Television Fans and Audiophiles " Section of this manual.

Consumer Warranty

Your Whistler product is warranted to the original purchaser for a period of one year from the date of original purchase against all defects in materials and workmanship. This limited warranty is void if the unit is abused, modified, installed improperly, if the housing has been removed, or if the serial number is missing. There are no express warranties covering this product other than those set forth in this warranty. All express or implied warranties for this product are limited to one year. Whistler is not liable for damages of any type arising from the use, misuse, or operation of this product.

Service Under Warranty

During the warranty period, defective units will be repaired or replaced (with the same or a comparable model), at Whistler's option, without charge to the purchaser when returned prepaid, with dated proof of purchase to the address below. Units returned without dated proof of purchase will be handled as described in section "Service Out Of Warranty." There are no authorized service stations for Whistler brand products other than the factory.

When returning a unit for service under warranty, please follow these instructions:

1. Ship the unit in the original carton or in a suitable sturdy equivalent, fully insured, with return receipt requested, and shipping charges prepaid to:

Whistler CTS
16 Elizabeth Drive
Chelmsford, MA 01824

IMPORTANT: Whistler will not assume responsibility for loss or damage incurred in shipping. Therefore, please ship your unit insured with return receipt requested.

2. Include with your unit the following information, clearly printed:

- Your name and street address (for shipping via UPS), and a daytime telephone number. (No P.O. Box please.)
- A detailed description of the problem (e.g., "Unit powers up without any warning lights but does not power anything. ").
- A copy of your dated proof of purchase or bill of sale.

3. Be certain your unit is returned with its serial number. For reference, please write your unit's serial number in the following space: s/n _____.

Units without serial numbers are not covered under warranty.

IMPORTANT: To validate that your unit is within the warranty period, make sure you keep a copy of your dated proof of purchase.

Service Out Of Warranty

Units will be repaired at "out of warranty" service rates when:

- The unit's original warranty has expired.
- Dated proof of purchase is not supplied.
- The unit has been returned without its serial number.
- The unit has been abused, modified, installed improperly, or had its housing removed.

The minimum out of warranty service fee for your Whistler product is \$55.00 (U.S.). If you require out of warranty service, please return your unit as outlined in the section "Service Under Warranty" along with a certified check or money order for \$55.00. Payment may also be made by MasterCard or VISA; personal checks are not accepted. In the event repairs cannot be covered by the minimum \$55.00 service fee, you will be contacted by a Whistler technical service specialist, (by mail or telephone), who will outline options available to you. If you elect not to have your unit repaired/replaced, it will be returned to you along with your certified check or money order.

IMPORTANT: When returning your unit for service, be certain to include a daytime telephone number.

Customer Service

If you have questions concerning the operation of your Whistler product, or require service during or after the warranty period, please call Customer Technical Service at 1-800-531-0004. Representatives are available to answer your questions Monday - Friday from 9:00 a.m. to 5:00 p.m. (EST).

If you have questions concerning the operation of this Whistler product please call customer technical service:

1-800-531-0004

Hours:

Monday - Friday

9:00 am - 5:00 pm EST

WHISTLER 500 WATT INVERTER SPECIFICATIONS

Maximum Continuous Power	500 Watts
Maximum Surge Capability (Peak Power)	800 Watts
No Load Current Draw	< 0.6 A
Waveform	Modified Sine Wave
Operating Input Voltage Range	11 - 15 Volts DC
AC Receptacle	Dual 3 Prong Grounded
Fuse	Dual 35 Amp (Spade Type)
Approximate Dimensions	2.75" H x 7.5" W x 10.25" L
Approximate Weight.....	4.25 lbs

WHISTLER CORPORATION

16 ELIZABETH DRIVE, CHELMSFORD, MA 01824
CUSTOMER TECHNICAL SERVICE TEL. 800/531-0004

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